REMARKS

Reconsideration of the rejection set forth in the Office Action is respectfully requested. By this Amendment, claims 10 and 19 have been amended. Currently, claims 1-28 are pending in this application. A change of address and new power of attorney are submitted concurrently herewith.

Rejection of claims 1-28 under 35 USC 103 over Haggerty in view of Cheng.

Claims 1-28 were rejected under 35 USC 103 over Haggerty (U.S. Patent No. 6,331,983) in view of Cheng (U.S. Patent Publication No. 2002/0150094).[1]

Multicast trees are commonly established to distribute information to multicast participants in an efficient manner. As noted in the background of the invention, there are several protocols that may be used to establish a multicast tree including Protocol Independent Multicast (PIM) and Distance Vector Multicast Routing Protocol (DVMRP). (See Specification at page 2, lines 4-6).

Once a multicast tree has been established using one of these protocols, the multicast tree may be used by the application that established the multicast tree, and may be read by other applications that are configured to use the same protocol that was used to establish the multicast tree. (Specification at page 2, lines 8-9). However, applications that are configured to read multicast information established using a particular protocol have conventionally not been able to read information about multicast trees using a protocol other than that particular protocol. For example, an application configured to read PIM multicast information would not be able to use a multicast tree established using DVMRP. (Specification at page 2, lines 9-11). Examples of several applications that may wish to read tree information established by other applications include network management programs and other programs that may wish to route data or troubleshoot multicast problems. (Specification at page 1, line 28 to page 2, line 2; and at page 8, lines 25-27).

Applicants discovered that multicast information could be stored in a Management Information Base (MIB) on routers on the network in a protocol neutral format and then retrieved by applications using an available network management protocol, such as Simple

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[1] Since Cheng was filed after this application was filed, only the portions of Cheng that are supported by the Cheng Provisional application (60/243,809) may be cited in support of a rejection. Applicants respectfully request the Examiner to reference portions of the Cheng provisional (rather than the Cheng published application) in subsequent rejections if further reliance on Cheng is deemed warranted. See MPEP 2136.03(III) and MPEP 715(III).

Network Management Protocol (SNMP), by applications using different types of multicast protocols. Further, applicants discovered that the retrieved information could be processed by the applications to enable the applications to recreate the established multicast tree in a protocol specific fashion to enable the application to use the multicast tree on the network.

The Examiner has taken the position that Haggerty discloses a method of producing a multicast tree for a multicast in a network which includes storing multicasting information in a protocol independent manner in network devices, but has conceded that Haggerty does not teach tracing the retrieved multicast information across the plurality of network devices to form the multicast tree (Office Action at page 2). The Examiner contends, however, that Cheng teaches tracing the retrieved multicast information across a plurality of network devices to form the multicast tree. Applicants respectfully traverse this rejection in view of the following arguments.

1. Haggerty does not teach a set of network elements each including a protocol independent multicast database.

Haggerty teaches a multicast switching system in which a new inter-switch messaging protocol is implemented to enable multicast traffic to be transmitted over the network. Specifically, Haggerty states in Col. 14, lines 19-27, that "the switches do not act as multicast routers, neither individually nor collectively – they do not exchange multicast routing protocol messages..." Rather, they implement "a new signal out and connect back interswitch messaging protocol" to enable connections to be established through the switch domain for the multicast traffic.

In Haggerty's protocol, information about the connections through the switch are stored locally and used locally by the switch to forward traffic. Specifically, the switches each maintain portions of two distributed databases – one of which keeps track of local senders at that switch and another of which keeps track of local receivers at that switch. The databases are readable via SNMP. (See Haggerty at col. 20, lines 29-56). The local senders and local receivers databases are discussed in greater detail at col. 20, line 59 to col. 21, line 28. Specifically, as stated in Haggerty, the information in these databases is announced periodically to other switches in the area to enable switches attached to routers to have full information of all receivers in the switched domain. (Col. 21, lines 31-43).

Claim 1 of this application recites a method for use on a network including a set of network devices which each includes a multicast database that is protocol independent. The

Examiner did not specifically point out where Haggerty teaches the use of a multicast database that is <u>protocol independent</u>. Rather, the Examiner merely stated that Haggerty teaches this aspect, citing Haggerty at col. 20, line 28 to col. 21, line 44. As is set forth in this cited portion of Haggerty, the data in the databases is specific to the new proposed "signal out and connect back" protocol being proposed in the Haggerty patent. The cited portion of Haggerty does not state that the databases are protocol independent, but rather focuses on the fact that the switches maintain a database of senders and receivers and periodically announces the databases to the other network devices. This comports with the protocol being proposed by Haggerty and would lead a person of ordinary skill in the art to conclude that the databases are therefore specific to the protocol being proposed. The fact that Haggerty mentions that the databases are readable via Simple Network Management Protocol (SNMP), also does not indicate that the databases are protocol independent, since SNMP may be used to read and set information protocol dependent data to a network device's Management Information Base (MIB). Accordingly, the mere use of SNMP does not indicate that the multicast database is protocol independent.

Thus, applicants respectfully submit that Haggerty does not disclose a method of producing a multicast tree for a network including a plurality of network devices in which a set of the network devices include a protocol independent multicast database. Since Cheng doesn't make up this deficiency, the combination of Haggerty and Cheng fails to render the claims obvious under 35 USC 103. Accordingly, applicants respectfully request that the rejection of independent claims 1, 10, 18, and 26, and the claims dependent thereon, be withdrawn.

2. A person of ordinary skill in the art would not have been motivated to combine Haggerty and Cheng.

Cheng teaches a way of maintaining multicast trees when the leaves of the tree (i.e. the users) and the root of the tree are moving. Cheng discusses the various multicast routing schemes, including DVMRP (see Cheng at [0043-0044]) and PIM (see Cheng at [0044]). Cheng then goes on to state that using these protocols with Mobil IP is an unworkable situation due to the need to update each aspect of the mobile solution every time one of the protocols changes (See Cheng at [0047]). Thus, Cheng decides that the existing protocols are unworkable in a mobile environment and opts to propose an hierarchical approach in which the routers are organized in a hierarchy. This provides structure to the network to allow changes in the network to be accommodated from a multicasting standpoint. (See Cheng at [0050-51]) The hierarchical

nature of the network or another tightly organized network architecture is deemed essential to Cheng, as evidenced by Cheng's statement that the proposed protocol will work "as long as the network nodes are connected in a hierarchy, physically or virtually." (Cheng at [0051]) or in a flat network (See Cheng at [0051]).

Accordingly, Cheng is not adopted for use in an ad-hoc environment such as the Internet but rather was developed for use in a very controlled environment in which the network elements are hierarchically arranged. Examples of such networks provided by Cheng include tactical or military networks in which one administrative domain is able to be established to coordinate communication between network elements.

As is well known, the Internet is not an hierarchical network or a flat network, but rather is more of an ad-hoc network in which many network elements, belonging to multiple companies, are interconnected over multiple overlapping administrative domains. Given the very different structure of the Internet from a tightly controlled hierarchical network, and the fact that Cheng devotes quite a bit of text to emphasizing why traditional multicast protocols that are used on the Internet (such as PIM and DVMRP) are inadequate, a person of ordinary skill in the art would not have been motivated to extract a portion of the teachings of Cheng and use that portion in connection with traditional multicast protocols.

To establish prima facie that a person of ordinary skill in the art would have found it obvious to combine two reference, the Examiner is required to establish in the first instance why the person of ordinary skill in the art would have selected the two particular references. It is not enough to simply show that two references include two aspects of the invention, but rather the focus in the initial instance is on why the two references would be selected for combination. In this instance, the two references teach two alternative protocols to PIM and DVMRP. Specifically, Haggerty teaches a signal out and connect back protocol for enabling multicast to traverse a routing domain/switching domain boundary, and Cheng teaches an hierarchical protocol for enabling mobile multicast in a tactical network. A person of ordinary skill in the art would not have been motivated to combine these references since they deal with very different problems and the underlying networks on which they operate are fundamentally different. Accordingly, applicants respectfully submit that it would not have been obvious to combine portions of Cheng with Haggerty.

The Examiner stated that a person of ordinary skill would have found it obvious to incorporate Cheng's teachings (finding multicast information to establish a multicast tree) with

the teachings of Haggerty. (Office Action at page 3). The Examiner has not indicated where the references suggest this combination, but rather cites several passages of Cheng and Haggerty which highlight the benefits of each of the individual references. Specifically, the Examiner cited a benefit advanced by Haggerty of his particular protocol (enabling efficient transmission of multicast traffic on a switched network) and cited other benefits advanced by Cheng of his particular protocol (HLIM includes mechanisms to establish a multicast tree, maintain the tree dynamically, and autoconfiguration, etc.).

The individual benefits of the cited references, by themselves, however do not provide motivation to create a combination of references, since these recited benefits exist without the combination. Specifically, each reference may assert that the system described in that reference has particular advantages. This, in and of itself, is insufficient to show that a person of ordinary skill in the art would have chosen two particular references from the thousands of available references, since each of the thousands of citable references is likely to assert that their proposed contribution provides particular advantages. Rather, the references must provide motivation to make the combination proposed by the Examiner. This may be done by establishing that the references themselves teach or suggest that making the proposed combination would provide particular advantages. Specifically, the Federal Circuit has sanctioned three sources which may provide motivation to combine references – explicit statements in the prior art, knowledge of one of ordinary skill in the art, or in some cases the nature of the problem to be solved. See In re Kotzab, 217 F.3d 1365, 1370 (Fed. Cir. 2000). The statements in the art, to qualify, must address the combination or somehow suggest the combination, rather than merely extolling the virtues of the particular reference. In this case the Examiner has not stated where the references suggest that the proposed combination should be made, but rather has simply pointed out that the references each purport to provide particular advantages in particular types of networks. Given the disparate underlying networks, and the fact that at least one of the references suggests that its contribution wouldn't work on a non-hierarchical network, applicants respectfully submit that the cited portions are insufficient to establish a motivation to combine the cited references. Accordingly, for this additional reason, applicants respectfully submit that the claims are patentable over the cited combination of references and respectfully request that the rejection be withdrawn.

Change of Address

A new power of attorney and a change of address are being submitted herewith. The Examiner is respectfully requested to change the correspondence address of this application and direct all future correspondence to the undersigned.

Conclusion

Applicants respectfully submit that the claims pending in this application are in condition for allowance and respectfully request an action to that effect. If the Examiner believes an telephone interview would further prosecution of this application, the Examiner is respectfully requested to contact the undersigned at the number indicated below.

If any fees are due in connection with this filing, the Commissioner is hereby authorized to charge payment of the fees associated with this communication or credit any overpayment to Deposit Account No. 502246 (Ref. NN-13744).

Respectfully Submitted

Dated: January 19, 2005

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